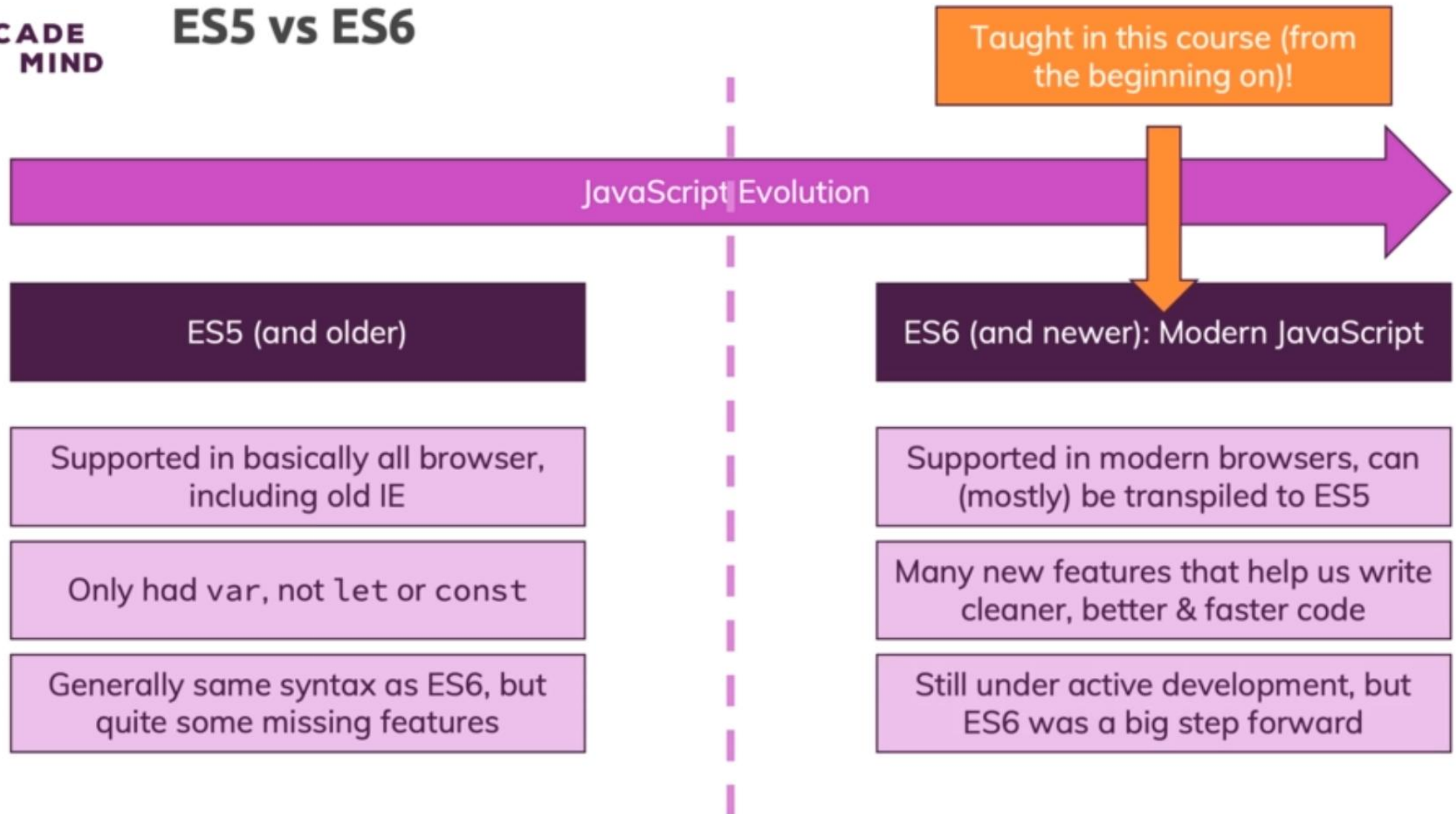


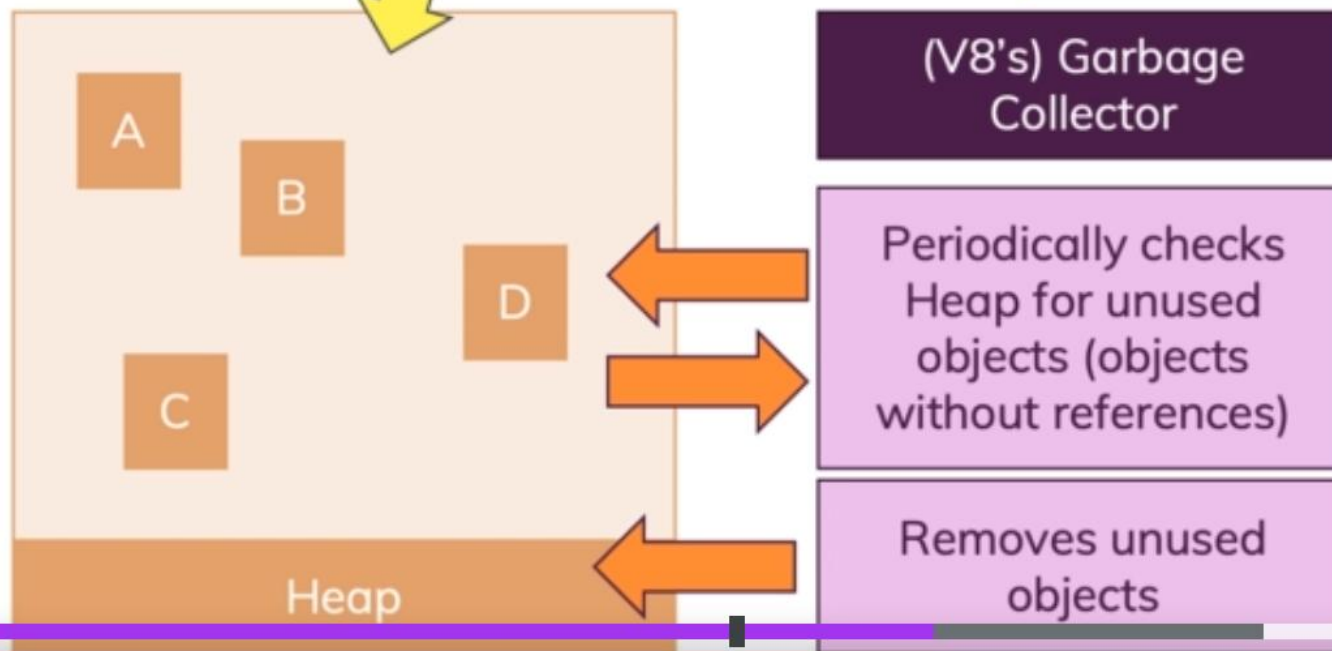
## ES5 vs ES6



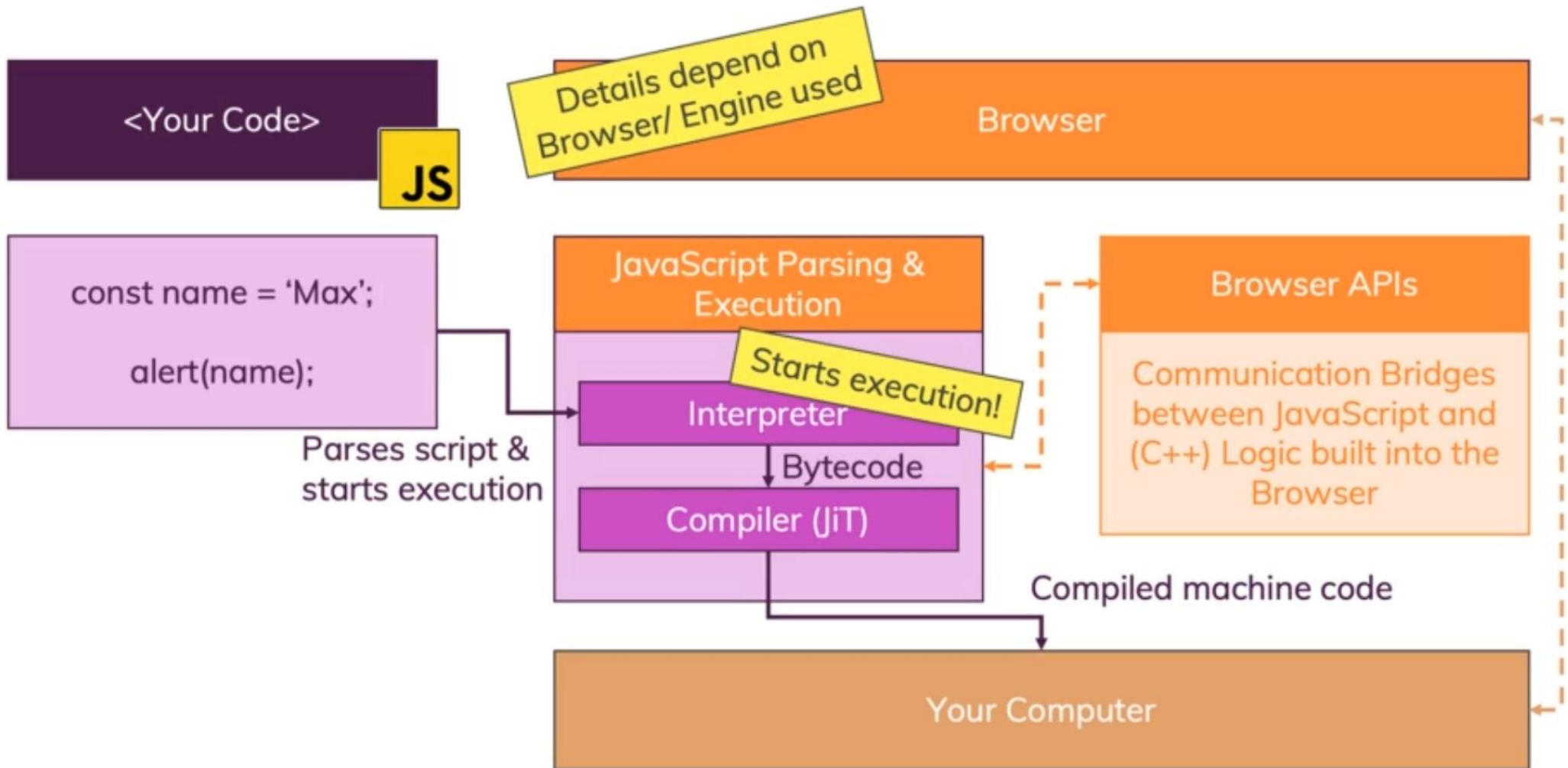
# Garbage Collection

How is this memory managed?

Beware of "Memory Leaks":  
Unused objects, where you  
still hold references to



# JavaScript Engines & What They Do



# Primitive vs Reference Values

Two Categories of Types/ Values in JavaScript

```
graph TD; Root[Two Categories of Types/ Values in JavaScript] --> Primitive[Primitive Values]; Root --> Reference[Reference Values]; Primitive --> P1[Strings, Numbers, Booleans, null, undefined, Symbol]; Primitive --> P2[Stored in memory (normally on Stack), variable stores value itself]; Primitive --> P3[Copying a variable (= assign to different variable) copies the value]; Reference --> R1[All other objects ("more expensive to create")]; Reference --> R2[Stored in memory (Heap), variable stores a pointer (address) to location in memory]; Reference --> R3[Copying a variable (= assign to different variable) copies the pointer/ reference];
```

Primitive Values

Strings, Numbers, Booleans, null, undefined, Symbol

Stored in memory (normally on Stack), variable stores value itself

Copying a variable (= assign to different variable) **copies the value**

Reference Values

All other objects ("more expensive to create")

Stored in memory (Heap), variable stores a pointer (address) to location in memory

Copying a variable (= assign to different variable) **copies the pointer/ reference**